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An Examination of Play-Based Assessment to Determine Social-Emotional Functioning in
Early Childhood

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Counseling, Clinical and School Psychology

by

Courtney Carlisle Bolton

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December 2015

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Early Childhood

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by

Courtney Carlisle Bolton

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I am immeasurably grateful for the support from my family, beginning with my parents pushing me to pursue my passions but also to remember my responsibility to contribute to my community as a citizen and participant. This dissertation is dedicated to the memory of my father, Gene D. Carlisle, in honor of his relentless work and contributions to his community and for his personal demonstration of resilience, compassion, and loving kindness.

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To Savannah and Carlisle, thank you for reminding me that my most important role in life is being your mom. The past five years have been transformational – Carlisle, you came into our lives the year that I started my doctoral work and have been with me every step of the way giving unconditional love, never-ending squeezes and reminding me to enjoy life's little and oft overlooked joys. Savannah, we began the dissertation journey together; just weeks after you were born, I proposed and just a few days before your second birthday, we get to celebrate the defense! Thank you both for keeping me grounded and for allowing me to celebrate the joys of parenthood and early childhood while working on this research. To my husband, John, words can barely express my gratitude. Thank you for being my partner and unwavering source of support through this process—We did it!

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ABSTRACT

An Examination of Play-Based Assessment to Determine Social-Emotional Functioning in Early Childhood

by

Courtney Carlisle Bolton

More than 80% of psychologists report using alternative assessment measures in place of, or to supplement, traditional standardized assessments to evaluate young children for special education eligibility, placement, and services. Recent research indicates that nearly 97% of alternative assessment tools currently used by psychologists and trained early interventionists to assess special education eligibility in early childhood are play-based measures that aim to provide an ecologically valid picture of a child's functioning across settings and to help inform specific interventions for treatment planning. However, limited research exists on the psychometric properties of play-based assessment measures for use in early childhood. In addition, psychologists are increasingly seeking strengths-based assessment tools to identify social-emotional concerns and protective factors for children in early childhood in an effort to provide a more comprehensive picture of the child's everyday functioning. In consideration of the research that social-emotional health and adaptive delays for ages 3 and younger may directly influence later functional outcomes for children, this paper explores the current practices and rationale for adjunctive and alternative approaches to assessment in

early childhood. This study investigated the validity of scores obtained from a play-based assessment tool, the *Transdisciplinary Play-Based Assessment, Second Edition* (TPBA-2; Linder, 2008). Findings from this study serve to provide additional psychometric support for the use of play-based assessments, especially for children with suspected developmental disabilities or delays in early childhood. Specifically, this study examined the concurrent validity between ($N = 44$) children's social-emotional functioning as assessed by the TPBA-2 and *The Devereux Early Childhood Assessment-Clinical Form* (DECA-C; LeBuffe & Naglieri, 2012). Results indicated significant ($p < .001$) associations between the measures. In addition, the study found evidence of social validity for the TPBA-2 as rated by the assessment team members ($N = 41$) and caregivers ($N = 12$). These findings provide additional evidence of concurrent and social validity in support of the TPBA-2 as an evaluation tool for the assessment of young children for early intervention and special education services.

Table of Contents

Chapter 1: Introduction	1
Support for Early Identification of Social-Emotional and Behavioral Concerns	3
A Critical Period for Identification and Intervention.....	4
Assessment in Early Childhood.....	6
Theoretical Considerations for Early Childhood Assessment	8
Social Learning Theory	9
Ecological Model.....	11
Strengths-Based Assessment	12
Current Assessment Practices.....	14
Limitations of Traditional Standardized Assessment Practices.....	16
Functional Outcomes	17
Assessment in Natural Environments	18
Technical Adequacy	22
An Alternative to Traditional Early Childhood Assessment: Play-Based Assessment	23
Play as an Assessment Tool.....	23
A Review of Play-Based Assessment Measures.....	25
Current Study	34
Research Questions.....	35
Chapter 2: Method	37
Participants.....	37
Children and Caregivers	37
Assessment Team	38

Procedure	39
Measures	40
Play-Based Assessment	40
Behavioral and Social Emotional Health.....	42
Social Validity of Parent Experience.....	43
Statistical Analyses	44
Research Question 1	44
Research Question 2	45
Research Question 3	45
Chapter 3: Results	45
Social Validity as Rated by the Assessment Team.....	47
Social Validity as Rated by Parents	49
Chapter 4: Discussion	51
Concurrent Validity	51
Social Validity as Rated by the Assessment Team.....	52
Social Validity as Rated by Parents	54
Limitations of the Study	55
Implications for Practice and Future Directions	57
References.....	60
Appendix A: Professional Evaluator Consent Form.....	83
Appendix B: Guardian Consent Form	85
Appendix C: Parent’s Perceptions of TPBA-2 Questionnaire.....	87

List of Tables

Table 1. Questions, Hypotheses, Variables, and Analyses	36
Table 2. Statistical Analyses, Sample Size, Power and Effect Size for Research Objectives	37
Table 3. Sample Demographics for Assessment Team Participants	39
Table 4. TPBA-2 Emotional and Social Domain Subcategories and Definitions	42
Table 5. Correlation Matrix of TPBA-2 Social-Emotional Subscales.....	46
Table 6. Descriptive Statistics for DECA-C Total Raw Scores and TPBA-2 Social- Emotional Age Scores	46
Table 7. Correlation Table of DECA-C Sub-domains and TPBA-2 Age Equivalency Score	47
Table 8. Usage Profile Ratings-Assessment Means and Standard Deviations	48
Table 9. PPS Means and Standard Deviations.....	50

Chapter 1: Introduction

Early childhood is a critical time to identify and treat emotional or behavioral problems and intellectual impediments. Recent research confirms that cognitive and social-emotional difficulties that arise in early childhood are relatively stable throughout childhood without treatment and are predictive of negative academic and social emotional outcomes (Al Otaiba & Fuchs, 2002, 2006; High, 2008; Lane, Little, Menzies, Lambert, & Wehby, 2010; Rose, Rose, & Feldman, 1989; Turney & McLanahan, 2012). However, evidence also shows that early intervention can ameliorate many social-emotional concerns that are prognostic of poor outcomes later in life (Brophy-Herb, Lee, Nievar, & Stollak, 2007; Webster-Stratton & Reid, 2003). Given that early childhood (the period between 0 and 60 months) is a time of dynamic, fast-paced change and growth, assessment during this time period can be a challenge even for skilled psychologists (High, 2008). With an increasing emphasis being placed on assessment providing an authentic picture of a child's functioning in natural settings, psychologists are recognizing the need for adjunctive or alternative assessment measures, such as play-based measures, to provide detailed and ecologically valid information for diagnosis and treatment planning. Research shows that play-based assessment measures are the most common alternative assessment tools used for diagnosis, special-education qualification, and treatment planning (Bagnato & Neisworth, 1994; University of Colorado, 2003, as cited in Linder, 2008).

With a shift of focus in the field of early childhood assessment from identification and diagnosis to relevant treatment planning and the provision of socially-related interventions, this study examines the validity of a play-based assessment tool designed to identify developmental strengths and weaknesses in early childhood. Research indicates that

early play is highly related to future academic skills (Christie, 1991; Pelligrini & Galda, 1993) and social competence (Bretherton, 1984; Yawkey & Pellegrini, 1984), making these areas a primary focus for play-based assessment. This paper focuses on the use of play-based assessment as an alternative or supplementary measure to assess these primary areas while also recognizing that developmental domains in early childhood are highly interrelated (Linder, 2008; Snow & van Hemel, 2008). In addition to providing ecologically valid portrayals of a child's daily functioning, research highlights the importance of having buy-in from key stakeholders, such as parents and psychologists, regarding the evaluation methods and results to inform intervention planning and ensure treatment adherence (Kazdin, 1982). Research has shown that the higher the levels of social validity, the higher treatment adherence is likely to be (Kazdin, 1980; Lane et al., 2009), making it an important variable to assess in early childhood assessment and treatment planning. Studies of social validity should provide information on the social implications of the assessment information; for example, what information does the tool provide and how does it relate to treatment planning, or does the intervention effect change that might have a beneficial social consequence for stakeholders (Turan & Meaden, 2011). This study seeks to investigate the social validity of play-based assessment from the perspective of the assessment team members and the caregivers of children being tested to provide additional information on the beliefs of those stakeholders directly affected by the assessment process. Specifically, this research explored whether caregivers believed that the results from play-based assessment were authentic, accurate, and relevant for the child and family, and queried the assessment team members regarding the functional use and usability of the measure. It is important to recognize that early identification is key to early intervention, as it has been shown to improve social-

emotional and behavioral functioning as well as academic outcomes (Adlof, Catts, & Lee, 2010; Gersten, Jordan, & Flojo, 2005; Lane, Kalberg, Lambert, Cenobori, & Bruhn, 2010). Given this understanding, it is critical to evaluate current assessment practices to identify children in need of services and how those assessment practices inform treatment and intervention planning (Smith et al., 2010). This dissertation explores the importance of early identification of behavioral and social-emotional challenges, provides a rationale for offering other assessment procedures in early childhood, examines alternatives to traditional standardized evaluation tools, and offers additional research support for the use of a play-based assessment model.

Support for Early Identification of Social-Emotional and Behavioral Concerns

The passage of the No Child Left Behind Act (NCLB; 2002) and the Reauthorization of Individuals with Disabilities Education Improvement Act (IDEA; 2004) underscore the importance of early identification and intervention for children (Fletcher & Vaughn, 2009). The IDEA (2004) and the National Association of School Psychologist's (NASP; 2005) Position Statement on Early Childhood Assessment support comprehensive infant, toddler, and preschool assessments that are authentic and do not discriminate based on family priorities or culture (IDEA, 2004; Jacob, Decker, & Hartshorne, 2011; National Association of School Psychologist [NASP], 2005). In early childhood, the prevalence of developmental disabilities is rising (Boyle et al., 2011; Chakrabarti & Fombonne, 2014; Drillien, Pickering, & Drummond, 1988). From 2006 to 2008, the number of children diagnosed with developmental disabilities, including but not limited to autism spectrum disorders (ASD), attention deficit hyperactivity disorder (ADHD), cerebral palsy (CP), intellectual disability (ID), and learning disorders (LD) rose to a reported rate of 1 in 6 (Boyle et al., 2011). Data

from the National Early Intervention Longitudinal Study (NEILS), which collected information on 3,338 infant and toddlers from 1996-2007, revealed that approximately 30% of preschool-aged children may be at risk or be identified as having a behavioral concern at school entry (Hemmeter, Ostrosky, & Fox, 2006). However, additional estimates reveal that only about 10% of those children are receiving access to early intervention services (Hemmeter et al., 2006). Children who receive early intervention are able to make significant gains in social-emotional development and display greater social-emotional competence than their peers who did not receive services (Brophy-Herb, et al., 2007).

On the basis of research that shows positive outcomes may be achieved through early intervention, recent educational policy and legislation places an increasing focus on early identification and data-based decision making (IDEA, 2004; Lane et al., 2010; Reschly, 2008). The Child Welfare League advocates for early intervention services for any child with an indication of a delay or disability (physical or emotional) to promote growth and prevent poor future outcomes (Morgan, Spears, & Kaplan, 2003). Early identification may also provide children with the intervention services necessary to facilitate skill development during this critical phase of development to prevent negative academic and behavioral results. Research by Webster-Stratton and Reid (2003) has demonstrated that children with early childhood behavioral difficulties who are identified in a timely fashion and receive early intervention are likely to make significant gains in positive emotional and behavioral functioning.

A Critical Period for Identification and Intervention

Without early intervention, research reveals that concerns related to behavioral and social-emotional issues that arise from birth to 5 years old are relatively stable throughout

childhood and are predictive of negative social-emotional outcomes including isolation from peers (Wood, Cowan, & Baker, 2002), lower social competence, and poor peer and teacher connections later in childhood and adolescence (Bulotsky-Shearer, Domínguez, Bell, Rouse, & Fantuzzo, 2010; Hamre & Pianta, 2001). Early behavioral and social-emotional challenges have also been associated with poor functional outcomes, including lower cognitive skills, failing grades, below average literacy acquisition, and higher dropout rates (Al Otaiba & Fuchs, 2003; American Academy of Pediatrics, 2006; Lane et al., 2010; Rose, Rose, & Feldman, 1989; Turney & McLanahan, 2012). Given that academic success is a measure of functional success for children, it is important to look at academic outcomes when considering the implications of unmediated behavioral and social-emotional concerns in early childhood and the developmental trajectories. Students with social-emotional and behavioral concerns have been shown to be isolated from and rejected by same age peers and to develop tense relationships with their teachers (Hamre & Pianta, 2001), which may result in teacher rejection and poor academic outcomes, such as low achievement and school dropout (Lane et al., 2010). Claessens, Duncan, and Engel (2009) found that behavior problems in kindergarten are highly correlated with poor reading outcomes by fifth grade; and work by Jennings and DiPrete (2010) revealed a link between kindergarten behavior problems and outcomes in math and reading in third grade. Results of a recent study confirmed previous research that showed attention problems present in kindergarten are negatively associated with cognitive skills at 9 years old (Turney & McLanahan, 2012). Thus, identifying children early may help prevent them from developing potentially detrimental relationships with peers and teachers that could lead to poorer academic achievement.

Assessment in Early Childhood

Assessment, which is defined as gathering evidence for the purposed of making informed, evaluative decisions, is typically conducted for four key reasons: (a) diagnosis or identification, (b) treatment and intervention planning, (c) to inform placement in educational programs, and (d) as a progress monitoring or evaluation tool (Losardo & Notari-Syverson, 2001; Meisels, 1994; Snow & van Hemel, 2008). In early childhood, the primary goal in assessing children should be to provide as accurate an account of daily functioning across as many natural settings as possible (Meisels & Atkins-Burnett, 2005; Snow & van Hemel, 2008). Experts in early childhood assessment and diagnosis assert that assessment is critical to conceptualization of a child's case and how the conceptualization informs treatment (Zero to Three, 2005). As children develop from infancy (12-24 months) to toddlerhood (24-36 months) to preschool age (36-60 months), conceptualization and most assessment shifts from medical and public health testing to assessment related to educational or functional outcomes (Snow & van Hemel, 2008). Several interrelated developmental domains are implicated in academic success. The National Research Academy on Early Childhood Assessment policy and previous studies outline five critical domains for success in early childhood: (a) cognitive skills, (b) social and emotional development, (c) sensorimotor development, (d) speech and language skills, and (e) adaptive skills (Albers & Grieve, 2007; Kagan, Moore & Bredekamp, 1995; Zero to Three, 2005). Although support exists for other developmental domains, such as temperament or personality, federal and state policy focuses on these five as interrelated and directly tied to successful functional outcomes in early childhood (IDEA, 2004; Snow & McGaha, 2003; Snow & van Hemel, 2008).

Recognizing these five developmental domains overlap and directly influence one another in early childhood, both federal law and best practice dictate that early childhood assessment should be multidisciplinary in its approach and provide a unique picture of a child's strengths and areas of need (NASP, 2010; Jacob et al., 2011). A multidisciplinary assessment process helps inform and provide relevant services to infants and toddlers with disabilities as well as their families and potentially to at-risk infants and toddlers depending on current state legislation (Jacob et al., 2011). IDEA (1997) legislation noted that in an effort to provide an unbiased and comprehensive assessment of a toddler, infant, or preschooler, the evaluations should use a multidisciplinary team to evaluate all interrelated domains of development (Harrington & Tongier, 1993). This notion was reaffirmed in the most recent legislation as well (IDEA, 2004). A multidisciplinary assessment process helps inform and provide relevant services to infants and toddlers with disabilities as well as their families and potentially to at-risk infants and toddlers depending on current state legislation (Jacob et al., 2011). A multidisciplinary team typically consists of a speech-language pathologist, occupational therapist or physical therapist, psychologist, and potentially a physician or social worker depending on the needs of the child and family to address each of the aforementioned developmental domains (Linder, 2008). The psychologist's role is typically to address the components of cognitive and social-emotional functioning as a member of the assessment team. Current early childhood assessment practices in those two domains are reviewed below. In consideration of these objectives and the critical window for identification in early childhood, the purpose of the evaluation should be considered prior to any formal testing given the diversity of clinical needs. The intent or purpose of testing should help inform the testing format, which may include but is not limited to formal

standardized assessments, rating scales, criterion-based assessments, observation scales, and diagnostic checklists. Although there is a wide variety of testing formats, traditional standardized assessments are the most widely used and research-supported for diagnosis of cognitive concerns and global developmental delays, while rating scales are most often used to assess and diagnose behavioral and social-emotional concerns (O’Grady & Dusing, 2014; Walker & Bracken, 1996).

Theoretical Considerations for Early Childhood Assessment

Zero to Three (2005), a nonpartisan, research-based resource for federal and state policymakers that advocates on the unique developmental needs of infants and toddlers, convened a panel of early childhood experts to develop a supplementary diagnostic tool to be used in conjunction with the *Diagnostic and Statistical Manual of Mental Disorders, (DSM-IV-TR*; American Psychiatric Association, 2000) that better accounted for the theoretical underpinnings of early childhood development and diagnostic clarification. The multidisciplinary panel of early childhood experts developed the *Diagnostic Classification: 0-3 (DC:0-3*; 1994, 2005), a classification of mental health concerns for young children that accounts for the idea that children grow up and develop in relationship with their caregivers and within the context of their natural environments. To highlight this for children birth to 3 years old, the five-axis classification system specifies axes for relationship classification, psychosocial stressors, and emotional and social functioning (Zero to Three, 2005). This system reflects the shift in the literature and conceptualization of children as the subject of diagnosis to taking environments and relationships into account as well. Standardized scores are important tools for educational measurement, but they do not always take into account the various systems influencing a child’s life. Given the dynamic developmental growth in

children from birth to 5 years old, traditional assessment measures may not be appropriate for those in a preacademic phase. A child may be capable of quickly learning numbers and colors or vocabulary, but this same child may not have had the exposure to that information. Researchers argue that practitioners should have constancy between their selected theoretical framework, assessment, and intervention planning (Tudge, Mokrova, Hatfield, & Karnik, 2009). These frameworks provide a conceptual representation or explanation of reality to narrow the field of assessment and evaluation to develop appropriate interventions (Tudge et al., 2009). For the assessment of disability, there has been a consistent call for improving upon the process since the early 1980s. Specifically, Whitcomb and Merrell (2013) advocate for a social-ecological approach to understanding the development of social-emotional functioning; this has roots in both social learning theory and the ecological model.

Social Learning Theory

Social learning theory provides a framework to explain the development of social, emotional, and behavioral capabilities and challenges and how children interpret and analyze internal states, reactions to these internal states, and messages they receive about these reactions. Social learning theory as described by Albert Bandura (1986) outlines five capabilities that explain how young children may take in, interpret, and respond to the world. These capabilities include: (a) *symbolizing capability*, which involves the use of symbolic communication, such as language to interact with the environment; (b) *forethought capability*, which allows young children to experience and anticipate consequences in their environment; (c) *vicarious capability*, or learning through observing others; (d) *self-regulatory capability*, which explains a child's ability to mediate internal states and the outward expression of those states; and (e) *self-reflective capability*, the ability for metacognition and analysis of our

actions and outcomes (Whitcomb & Merrell, 2013). Each of these capabilities is necessary for optimal social-emotional functioning and successful social relationships and also provides a conceptual framework from which to consider abilities and disabilities that may influence the development of behavioral or social-emotional outcomes. In addition to considering the innate capabilities, Bandura (1997; 1986) proposed two adjunctive theories to explain the social learning process: *triadic reciprocity*, a concept that recognizes that a child's personal factors, behaviors and environment all work in relationship to one another to shape each other; and *observational learning*, which is the process of learning within a social context (Bandura, 1977; Whitcomb & Merrell, 2013). These concepts direct assessment team members regarding the mechanisms of learning and the importance of social context in development. Whitcomb and Merrell (2013) outline four cognitive processes required for observational learning: (a) *attention*, the ability to focus on a model or situation; (b) *retention*, the ability to remember an event; (c) *production*, or the ability to act out the behaviors children have experienced vicariously; and (d) *motivation*, or the desire to perform these behaviors. Given that a child has each of the five innate capabilities, being able to consider the cognitive abilities outlined above provides another layer for assessment of social-emotional and behavioral functioning, which is intimately related to cognitive skills and academic success. Although Bandura promotes the idea of learning in a social context, Bronfenbrenner's (1979) ecological model and Samerhoff's (2009) transactional models are also valuable frameworks for the conceptualization of development that expand upon the environmental contexts in which a child might mature.

Ecological Model

The ecological perspective considers the infant or toddler's mental health and wellness within multiple environments that influence one another as well as the child's development (Lieberman, 2006). Bronfenbrenner's model (1979) argues that the child's systems, including the environmental setting, the cultural context that incorporates political systems and institutions, the behavior from the child, and immediate reactions all sway development. Bronfenbrenner's (1986) ecological framework accounts for contextual factors, including the child's microsystem (parenting style, child-parent and parent-parent relationships), mesosystem (linking relationships between home and school or school and work), exosystem (family social networks or neighborhood community contexts), macrosystems (cultural and political influences), and chronosystems (changes over time, such as stability in socioeconomic status). In addition, the child's internal biological, psychological, cognitive, and social systems are taken into account (Bronfenbrenner, 1994; Cicchetti & Lynch, 1993). These external, community, and cultural influences should be assessed during treatment planning as helpful or hindering to positive change. In his later work, Bronfenbrenner (1994) described the interactions between development and environmental contexts as "proximal processes." For assessment purposes, this means that children should be assessed within the context of their relationships (Zero To Three, 2005). While Bronfenbrenner's (1990) ecological framework accounts for the contextual factors, Sameroff (2005) described how interactions, such those between a child and a parent or a child and a teacher, can influence the behavior of the child as well as the adults in the relationship and ultimately change the environment. Sameroff (2009) described the transactional relationship, detailing that any change to a single system (such as those outlined

by Bronfenbrenner's ecological model) can cause multidirectional shifts in the other systems and ultimately transform the original system. In conjunction with the ecological perspective, Sameroff's transactional model can describe how external influencers act as reciprocal facilitator's of change. For example, a child's behavior could act as an influence on how a teacher or parent responds to a child; children who are not particularly affectionate with mothers may receive less attention in infancy and toddlerhood just as children with behavior problems in preschool may alter a teacher's perception of that child and thus change the learning environment. In order to explain better mechanisms of change, the synthesis of ecological and transactional models further allows researchers to examine environmental factors affecting a child and consider transactional relationships within those environments to explain ongoing mechanisms of change.

Strengths-Based Assessment

The overarching ecological framework places the child and their families at the center of the target for assessment and intervention; this specific placement in the ecological context allows for practitioners to take into account a child's strengths to navigate the rest of his environment and ecology. Although many physicians and psychologists take a deficit-based approach to mental health assessment (Epstein, 1999), practitioners are beginning to recognize and advocate for the importance of strengths-based assessment models for mental health work with children (Greenspoon & Saklofske, 2001; LeBuffe & Naglieri, 2003). Mental health intervention services have traditionally focused on an individual's psychopathology while neglecting a person's individual strengths and attributes that could serve as protective factors or aid in resiliency (Seligman, 2002). Strengths-based assessment approaches are gaining momentum in both clinical and school-based practice, weighing a

child's strengths in addition to a child's risk factors to achieve a more authentic picture of the individual's functioning (Epstein, Synhorst, Cress, & Allen, 2009; Rashid & Ostermann, 2009). With the increased focus and implementation of practical tools to assess areas of strength or resilience, practitioners are able to use positive traits and strengths to better inform intervention planning and effectively provide treatment to influence positive transactional relationships with teachers and increase feelings of well-being and gratitude (Proctor et al., 2011; Sutherland et al., 2010).

Psychologists who have adopted a strengths-based approach to mental health assessment consider both the strengths of a child and the areas of concern to provide a more complete approach to mental health treatment (Greenspoon & Saklofske, 2001). *Zero To Three's DC:0-3* (2005) encourages psychologists to not only take into account a child's strengths, but also to assess a child within the context of ecologically valid settings and through the lens of their interactions with caregivers to get an accurate picture of the child as well as to inform appropriate treatment planning. When considering assessment as a tool for case conceptualization and intervention planning, it is important that the assessments (a) include information regarding all five interrelated domains, (b) occur across multiple settings, and (c) provide a comprehensive and accurate picture of the child's relative abilities in addition to the child's presenting concerns. Taking a child's internal and external resources into account may assist in treatment planning and providing more tailored interventions that highlight the strengths of the child (Linder, 2009). In addition to providing more targeted interventions and goals, strengthening a child's skills may build resilience for children who may otherwise demonstrate risk for social-emotional and behavioral concerns (DiStefano, Kamphaus, Horne, & Winsor, 2003). Strengths-based assessment may have a number of

positive outcomes, including developing beneficial collaboration with parents, identifying areas to improve transactional relationships between the child and caregivers, including parents and teachers (Sutherland et al., 2010).

This approach may be particularly important for intervention during early childhood when accounting for the stance of Zero To Three that diagnostic classification should consider that all infants demonstrate great variability and individual differences in motor, sensory, language, cognitive, affective, and relational development and perhaps more pertinent, young children mature within the context of relationships (Zero to Three, 2005). When strengths-based approaches are incorporated into diagnostic assessments, psychologists have much more relevant information available for treatment and intervention planning. Accounting for a child's unique strengths and abilities in conjunction with any areas of concern provides psychologists with a more comprehensive picture of the child for the purposes of clinical formulation of diagnosis and treatment planning. In addition, strengths-based assessment allows interventionists to promote positive transactional relationships between children and their families, which may lead to feelings of mastery and optimism for the child (Proctor et al., 2011; Sutherland et al., 2010).

Current Assessment Practices

For early childhood assessment, state laws governing special education eligibility and services may require the use of traditional assessments, defined as standardized, norm-referenced assessments that typically require a child to respond to a predetermined set of questions or demands administered by an evaluator in a controlled environment and using scripted prompts and materials (Macy, Bricker, & Squires, 2005; NASP, 2010; O'Grady & Dusing, 2014). For cognitive tasks, they often require children to answer a certain number of

sample or starter questions appropriately to achieve a basal score or starting point prior to the assessment actually beginning. In addition, the child does not receive credit for any correct answers following a ceiling score, defined by a predetermined number of incorrect items (O’Grady & Dusing, 2014). These traditional assessment measures provide a standardized or prescribed format for assessment to ensure identical delivery of tasks and demands for the purposes of scoring and comparing children to their same-aged peers. The results of these standardized tools provide outcomes with standard scores, *t*-scores, and percentile rankings, as well as categorical identifiers. Traditional standardized assessment measures allow individual children to be compared to a normed sample of their peers to assess cognitive, social-emotional, and adaptive abilities. When used for the correct purpose with the intended populations, standardized assessments may provide valuable information about a child’s intellectual and social-emotional functioning (Naglieri & Goldstein, 2009).

In order to qualify for services, many states require that psychologists use traditional assessments to ascertain whether or not children fall a minimum of two standard deviations below the standardized norm (Macy et al., 2005). This statistically significant cut-off gives many school districts a clear guideline for determining eligibility for special education services. When a state has set forth specific standardized assessments that psychologists must use to assess in early childhood (Macy et al., 2005), psychologists must consider whether or not these predetermined methods are sufficient and appropriate given the information collected in collaboration with the primary caregiver. An additional onus is placed upon the psychologist to ensure that the complete evaluation provides an accurate portrayal of the child’s abilities and any delays or disability. To provide information aligned with the new guidelines set forth by the IDEA Reauthorization (2004), some traditional assessment

measures, such as the *Bayley Scales of Infant and Toddler Development, Third Edition* (Bayley-III; Bayley, 2006), an individually administered standardized instrument used to assess infant and toddler functioning, have revised their instruments to ensure they meet standards by including information across the five developmental domains set forth by legislation: cognitive, motor, adaptive, social-emotional, and language (Albers & Grieve, 2007).

Whitcomb and Merrell (2013) outline the five methods for the assessment of behavioral, social, and emotional problems in young children: (a) direct observation, (b) behavior rating scales, (c) interview, (d) sociometric approaches, and (e) self-report. Adult informant (parent and teacher) rating scales and questionnaires have traditionally been the most common method of assessment for behavioral and social-emotional assessment in early childhood (Achenbach & Edelbrock, 1984; Walker & Bracken, 1996). However, many school psychologists, child clinical psychologists and early childhood assessors prefer naturalistic observations that are sensitive to environmental influences and factors that may affect a child's presentation (Bartolo, Dockrell & Lunt, 2001; Doll & Elliot, 2004). The inability to reflect a child's performance in naturalistic environments has been an ongoing criticism of traditional assessments; in order to minimize distractions during testing, standardized instruments are administered outside of the child's everyday routines and environments (Doll & Elliott, 2005; O'Grady & Dusing, 2014, Whitcomb & Merrell, 2013).

Limitations of Traditional Standardized Assessment Practices

Traditional standardized assessment tools may not always provide accurate or relevant information for assessors given the objectives of the assessment. These measures are designed to be assessor-directed, to identify specific skills outside of the context of a child's

everyday routines and in a controlled environment that is also not an ecologically valid setting for a young child (O'Grady & Dusing, 2014). Naglieri and Goldstein (2009) caution against the use of traditional standardized measures with unintended populations and those not adequately included in the standardized sample, such as young children birth to Age 5 and children with developmental disabilities. Researchers consistently note two drawbacks to using standardized assessments to qualify young children for services: the results of the traditional assessments as defined above rarely provide guidance for effective treatment planning; and they do not give an accurate, authentic or complete picture of the child's presenting behaviors, parental concerns, and strengths of the child (Losardo & Notari-Syverson, 2001; Macy et al., 2005). Other researchers have reported additional concerns, including: (a) evidence of validity and reliability of the standardized tools in assessing young children; and (b) deficiency in the relevance of the results from early childhood standardized assessment tools and ratings that purportedly provide developmental levels for cognitive skills, adaptive skills, and social-emotional levels against a normed sample (Grisham-Brown, 2000; Losardo & Notari-Syverson, 2001).

Functional Outcomes

As research consistently finds that the results from traditional standardized assessments do not translate into effective treatment planning or early interventions, psychologists report needing to supplement current assessment batteries to attain more functional outcomes for treatment planning (Bagnato & Neisworth, 1994; Fuchs, Fuchs, Hosp, & Hamlet, 2003; Macy et al., 2005; Neisworth & Bagnato, 2004). Due to the lack of functional outcomes for treatment planning, researchers have been calling for more authentic assessment measures for the past decade (Fuchs et al., 2003, Macy et al., 2005). Currently,

most traditional assessments have to be administered alongside additional complementary assessments, such as curriculum-based measures, following qualification for special education services in early childhood in order to provide information that can be used to implement relevant and effective interventions (Fuchs et al., 2003). Neisworth and Bagnato (2004) found that more than 50% of the time traditional standardized assessments are used to evaluate cognitive and social-emotional concerns, early childhood practitioners find results from these measures are not useful for the purpose of treatment planning.

Assessment in Natural Environments

Although norms-based standardized tests provide valuable information measured against the typical performance of a population, standardized tests may not provide an accurate picture of children with disabilities and delays (Koegel, Koegel, & Smith, 2007; Koegel & Koegel, 2010). As developmental theories have shifted from more subject-focused models of development, such as those outlined by Piaget and Erikson, to models that also take into account transactional and environmental contexts of developments (Bronfenbrenner, 1998; Samerhoff, 2009), psychologists and federal legislation have also evolved to underscore the importance of leveraging the child's caregiver as a partner in evaluation as well as assessing children in their natural environments. This progression of developmental theory has put traditional assessments under scrutiny because they do not take into account that children do not have the cognitive maturity to comprehend fully the importance of evaluations and appropriate behaviors during those evaluations (e.g., following instructions), making it complicated for psychologists to get an accurate and valid assessment (Greenspan & Meisels, 1996). Standardized assessments may also fail to take into account the ways in which children express their knowledge through play and action (Shepard, Kagan, & Wurth,

1998). Research shows that children from birth to 5 years old are more likely to demonstrate comprehension, adaptive skills, and cognitive abilities through “showing” and “doing” (Shepard et al., 1998), rather than directly responding to questions such as those incorporated in some traditional assessments of cognitive, social-emotional, or adaptive abilities.

Federal law as outlined in IDEA (2004) Part C, the NASP position paper, and the APA and NASP ethical guidelines and standards all concur that assessment in early childhood should be multifaceted and authentic, meaning the assessment should portray an accurate picture of the child’s functioning, including strengths and areas of delay, across settings. Best practices outlined by influential national and state organizations, including the NAEYC and the Division for Early Childhood (DEC), highlight the importance of assessments conducted in natural environments that examine children’s abilities within the context of daily routines and activities (Snyder, Wixson, Talapatra, & Roach, 2008). In addition to assessing children for social-emotional and behavioral risk, it is important to evaluate other skills that may serve as protective factors for children (Doll & Lyon, 1998). While a few social-emotional behavior rating scales, most notably the *Child Behavior Checklist* (CBCL; Achenbach, 1991) and the *Behavior Assessment System for Children, Second Edition* ((2nd ed., BASC-2; Reynolds & Kamphaus, 2004) include an adaptive component that assesses daily living skills, most tend to measure risk or skill deficit without providing specific information about the relative strengths or protective factors of a child, including self-concept, attachment, problem-solving skills, persistence, or emotional expression. These measures also tend to be given as part of a larger battery, including additional assessment of the other four domains: cognitive, sensorimotor, language, and adaptive skills. Researchers have consistently indicated that accurately identifying adaptive

skills for children with delays or neurodevelopmental disabilities, such as autism spectrum disorders, may help target more appropriate treatment interventions (Matson, Rivet, Fodstad, Dempsey, & Boisjoli, 2009). A survey of practicing school psychologists revealed that 55% of the trained and licensed professionals who administered standardized early childhood intelligence tests found that more than half of the test results were not viable in diagnosis or special education qualification as they were unable to give an accurate representation of the child's performance (Neisworth & Bagnato, 2004). Participants in the study also reported that the results are not consistent and do not provide an accurate overall picture of the child's functioning (Neisworth & Bagnato, 2004).

To obtain a more accurate picture of a child's relative strengths and delays, Johnson and Marlow (2008) recommend "testing limits," or disregarding the set points to obtain basal and ceiling scores in order to gain additional information on a child's skills. On standardized assessments of global functioning, however, the researchers note that any information gained from this method must be reported as descriptive and not incorporated into the standardized score results. The increasing call for accountability within education has led to a review of whether assessment methods and interventions work together to develop curriculum planning that leads to achievement (Hosp, 2008). Although many traditional measures may have solid psychometric evidence supporting their reliability and validity, it is important to understand the theoretical underpinnings and purpose for which the assessment measures were designed (Naglieri & Goldstein, 2009).

Curriculum-based assessment. Often, curriculum-based measures are used to supplement traditional standardized assessments in order to provide guidance for treatment planning. This is aligned with previous research that provides support for curriculum-based

assessments as authentic assessments that contribute valuable information for treatment planning in early childhood (Fuchs & Deno, 1994; Hosp, 2003). Because most curriculum-based assessment measures do not compare a child's performance to standardized norms, most are not permitted by states as standalone measures for use in eligibility determinations (Macy et al., 2005; Shakelford, 2004). For preschool use, many of the researched curriculum-based assessments are play-based measures, such as the *Assessment, Evaluation, and Programming System for Infants and Children* (AEPS; Cripe & Slentz, 1993; Macy et al., 2005). Curriculum-based assessments may be appropriate for use in preschool, but they are not intended for the assessment of most infants and toddlers given the focus on social-emotional development rather than academic instruction in infant and toddler programs. In addition, curriculum-based assessments are completed by teachers with varying years of experience in observing students and completing assessments rather than psychologists with training in assessment and mental health and development. According to research by Hemmeter, Ostrosky, and Fox (2006), teachers do not receive sufficient training to identify social-emotional and behavior concerns that children may display at preschool entry, making it more difficult for them to assess and provide intervention accurately for a child with developmental delays or disruptive behavior. However, Kamphaus and Reynolds (2002) found that data from teachers on a child's social-emotional and behavioral functioning may be more reliable than data from parents for preschool children. In addition, other research shows that there is low agreement between teacher and parent ratings of social-emotional and behavioral concerns (Achenbach, McConaughy, & Howell, 1987). These findings may indicate that expectations, environmental influences, and relationships influence outcomes on rating scales and observational assessments. Similar to traditional assessment measures,

curriculum-based measures do not require parental involvement, nor are they multidisciplinary as required by the standards set forth in legislation and public policy. Limitations of using curriculum-based measures for diagnostic, placement, or services in isolation include: (a) the inappropriateness for measuring social-emotional development in infancy and toddlerhood, (b) lack of training for teachers responsible for implementing the assessment measures, (c) the lack of parental involvement during the assessment process, and (d) failure to include a multidisciplinary approach in assessment. These measures are primarily developed for gathering evidence on academic competence and may offer specific supplementary material to inform certain placement or progress monitoring questions (Fuchs & Deno, 2003).

Technical Adequacy

IDEA (2004) legislation further specifies that assessments should offer evidence of reliability and validity for the domain(s) being evaluated, and the selection of assessment tools should be determined based on a comprehensive clinical interview, review of records, and clinical judgment. In a review of 13 social-emotional assessment measures designed to evaluate preschool behavior, Bracken, Keith, and Walker (1998) found significant limitations with regard to the measures' psychometric support and technical adequacy; this work paralleled earlier work conducted by Bracken (1987) and Flanagan and Alfonso (1995), who reviewed cognitive measures designed for children under 4 years old and also found significant limitations of the measures. Although the cognitive measures showed improvement of the psychometric properties over a 10-year period, only the Bayley-II was found to be technically adequate for cognitive assessment of a child 4 years old or younger (Flanagan & Alfonso, 1995). Even with the gains in the psychometric properties made over

the past decade, the criticism remains that these early childhood behavioral, social-emotional, and cognitive assessment tools are designed to measure a child's skill out of the context of their natural environments (O'Grady & Dusing, 2014; Pyle, 2002). Howell et al. (2008) assert that it is important to consider many aspects when evaluating a child and always account for error in assessment procedures.

An Alternative to Traditional Early Childhood Assessment: Play-Based Assessment

Research on assessment in early childhood primarily outlines two paths to ensure authentic assessment in early childhood: (a) play-based assessment or (b) curriculum-based assessment to determine functional capacity in five domains: sensorimotor, social-emotional, language, cognitive, and adaptive skills in natural environments (Fuchs & Deno, 2003). Research by Bagnato and Neisworth (1994) found that school psychologists endorsed play-based assessment as one of the most commonly used alternative assessment tools for infants and preschoolers to either supplement or replace traditional assessments. A survey by the University of Colorado (2003) found that professionals in the state used play-based assessment as a primary component in determining eligibility in 97% of Part C and 82% of Part B service determinations. The Reauthorization of IDEA Part C (2004) and the NASP Position Paper on Early Childhood Assessment (2005) both conclude that play-based assessments are valid and legal methods for authentic evaluation and to determine eligibility for interventions under the law.

Play as an Assessment Tool

Play has been scrutinized as a window into children's development and learning since the late 1800s beginning with the work of Hall (1896), who viewed play as a means of examining a child's internal state of development, and Groos (1899), who evaluated play as

an evolutionary learning tool designed to help young children master the roles of hunter and nurturer (as cited in Gitlin-Weiner, Sandgrund, & Schaefer, 2000). Children birth to 5 years old learn and acquire skills related to cognitive development, emotional expression and regulation, language, and sensorimotor and adaptive ability through *play*, which is defined as a pleasurable, self-initiated, constraint-free, and fulfilling tasks (Bray & Cooper, 2007; O’Grady & Dusing, 2014). Play is foundational for many early learning tasks that utilize and support all developmental domains: (a) cognitive, (b) social-emotional, (c) language, (d) sensorimotor, and (e) adaptive skills (Linder, 2008; Vig, 2007). Findings from research have shown that all children demonstrate the same developmental play sequences, but children with disabilities display observable differences in their play (Field, Roseman, De Stefano, & Koewler, 1982). Another set of research supports the notion that for children with disabilities, play may be a tool to measure differences between and within groups of children with special disabilities. Work by Mindes (1982) assessed children ages 3 years, 6 months to 6 years with diagnoses of learning disorder, intellectual disabilities, and behavior disorders, and found that the only assessment to show significant differences between the three sets were measures of play. Further study of children with Down syndrome and ASD reveals significant differences in play when matched against same aged typically developing peers and peers with different developmental disabilities (Baron-Cohen, Leslie, & Frith, 1985; McCune, 1986; Sigman & Sena, 1993). Studies have linked the development and sequence of play to social and academic skills including: problem solving, skill mastery, language development, promoting abstract thought, and *theory of mind*, or the understanding of other’s mental states (Baron-Cohen, 1997; Hickling, Wellman, & Gottfried, 1997; O’Connor & Ammen, 2012). Research demonstrates that play provides valuable information for educational intervention (Ailwood,

2003). Currently, little research exists to provide support for specific models of play-based assessment, especially in comparison to traditional standardized assessment measures (Kelly-Vance, 2008; O'Grady & Dusing, 2014).

A Review of Play-Based Assessment Measures

In contrast to traditional standardized assessments, play-based assessments are typically child-directed, contextually authentic assessments designed to provide a reliable picture of a child's skills within a natural setting and ecologically valid results for treatment planning (O'Grady & Dusing, 2014). NASP's *Best Practices in School Psychology V* (Thomas & Grimes, 2008) endorses three distinct evidence-based play assessment and intervention models: the *Play Assessment Scale, Fifth Edition* (PAS-5; Fewell, 1992; 1995), *Transdisciplinary Play-Based Assessment, Second Edition* (TPBA-2; Linder, 2008), and the *Play in Early Childhood Evaluation System* (PIECES; Kelly-Vance & Ryalls, 2005), as authentic assessment measures that are directly related to treatment planning (Kelly-Vance & Ryalls, 2008). Research shows that these play-based models, which utilize semi-structured or structured observation of play rather than requiring standardized administrations and responses, are effective in demonstrating the strengths and delays in a child's performance as required by the most recent reauthorization of IDEA, and also provide specific information about areas of development (Athansiou, 2006; Kelly-Vance, Ryalls, & Gill-Glover, 2002; Linder, 1993). In addition, these models are highly sensitive to developmental change, language development, and culture (Linder, 2008; Meisels & Atkins-Burnett, 2005). Play-based models have been shown to easily adapt to accounting for cultural proclivities, such as types of play, instruments of play and styles of play to show less bias during testing than a traditional assessment may show (Linder, 2008).

While researchers agree that play-based assessments provide a lot of detail and functional information for intervention (Athanasίου, 2006; Kelly-Vance et al., 2002; Linder, 1993), they propose two divergent schools of thought about collecting data. Historically, play assessment has been used for two purposes: (a) to examine a child's play as a developmental domain based on theories of developmental play (Fewell, Ogura, Notari-Syverson, & Wheeden, 1997) and (b) to measure the five interrelated domains of development during early childhood through the use of play as highlighted by the PIECES and TPBA-2 models (Linder, 1993; Kelly-Vance et al., 2002). However, even the models that seek to evaluate overall developmental functioning of the child through play offer different models for assessment of play-based skills. Linder (2008), the developer of the TPBA-2, advocates for observation of free play as well as facilitated play, while Kelly-Vance and Ryalls (2005), the developers of PIECES, utilizes observations of spontaneous free play to achieve standardized scores. Although these models differ in the assessment format, they are both theoretically-based, empirically-supported models that yield functional information for eligibility determination and treatment planning (Kelly-Vance et al., 2002).

PAS-5. The PAS-5 uses a developmentally-sequenced 45-item scale that relies on clinical observation to score the child's play with eight sets of predetermined toys based on the child's corresponding age set. This measurement was developed for use with children 24 to 36 months old. Throughout the assessment, the child is given the opportunity to play with several different sets of play materials and is rated based on the type and quality of play during free play session. The assessor presents the child with a variety of play objects and toys to observe the child's functional and symbolic use of the objects. Raw scores are then calculated once a basal (three consecutive 4-point scores) is achieved and the ceiling (three

consecutive scores of 0) has been reached. Each item presents the opportunity to score with points for spontaneous play and for prompted play; for example a child may earn four points for showing a novel skill in spontaneous play, three points following a general verbal prompt (e.g., “What can you do with these?”), two points after a specific verbal instruction (e.g., “Feed the doll”), one point following a specific verbal instruction with the examiner modeling the action, or zero points if the child did not engage in the target action. The assessment process also includes a spontaneous play observation and a facilitated play session, but the play age is only determined using the spontaneous play component to determine a basal and ceiling. The 45-item scale is scored to achieve a raw play score, which is then converted into a play age. All published psychometric support for the PAS-5 available is reported and discussed below.

Psychometrics of the PAS-5. Research on the original PAS has demonstrated high construct validity, concurrent validity, and predictive validity for the measure. A study by Eisert and Lamorey (1996) showed moderate to strong concurrent validity ($r = .56$ and $r = .90$, respectively) between the PAS, the *Gesell Developmental Schedules* (GDS; Gesell, 1979), and the *Mullen Scales of Early Learning* (MSEL; Mullen, 1995). Fewell (1986) found that the PAS was significantly correlated ($r = .91$) with the *Developmental Activities Screening Inventory* (2nd ed., DASI-II; Fewell & Langley, 1984). Additional research by Glick (1994) demonstrated strong associations ($r = .60$) between the PAS and the *Bayley Scales of Infant Development* (Bayley, 1969), as well as strong correlations ($r = .60$) with the *Stanford-Binet* (Terman & Merrill, 1973) in a sample of 300 low birth weight infants.

Limitations of the PAS-5. The PAS-5 is developed upon the basis of research that developmentally sequences play and demonstrates solid psychometric properties. The PAS-5

demonstrates value as an assessment tool of play and offers information regarding deficits or delays in play that may be beneficial for treatment planning. However, the PAS-5 is limited in that it codes play as an individual domain rather than using play to assess for skills in the developmental domains (cognitive, social-emotional, sensorimotor, adaptive, and communication skills). In addition, the PAS-5 does not mandate parent involvement or the use of a multidisciplinary team. While there is flexibility in whom can administer the PAS-5, including teachers, psychologists, and early interventionists, this also requires a significant amount of information and training on development of play prior to administration. In addition, the play ages were not developed from a standardized sample, and the measure requires more evidence and support regarding fidelity of implementation and reliability.

PIECES. The PIECES is one of the most recent play-based assessment measures that was developed based on the TPBA. Modeled after the TPBA, the PIECES assessment approach includes a free play observation component and can be used in any naturalistic setting with any array of toys expansive enough to demonstrate a range of play styles and behaviors (Kelly-Vance & Ryalls, 2005). Although parents and adults are able to observe the free play component, they are instructed not to ask questions or scaffold the child during free play (Kelly-Vance & Ryalls, 2005). The play scale is divided into three types of play: (a) exploratory, (b) simple, and (c) complex play; and is coded as such. Exploratory play ranges from 1 to 6 and pretend play ranges from 7 to 13. The PIECES coding guidelines are also based on the TPBA coding subdomains except for the core subdomain of exploratory/pretend play that was developed based on research-based evidence (Kelly-Vance & Ryalls, 2005). For the PIECES core subdomain, scores range from 1 (basic mouthing) to 13 (complex, multistep pretend play) (Sualy, Ryalls, Kelly-Vance, & Yount, 2011). The remaining

subdomains are derivatives of Linder's TPBA model and include: problem-solving skills, categorization skills, quantitative skills, drawing skills, and seriation abilities (Kelly-Vance & Ryalls, 2005).

Psychometrics of PIECES. Kelly-Vance and Ryalls (2005) studied test-retest reliability following a brief training on play coding and found moderate test-retest reliability for typically functioning children ($r = .48$) and exceptional children ($r = .58$). When coding typically developing children, intraobserver reliability is (.90) while intraobserver reliability for exceptional children is 1.0 (Sualy et al., 2011).

Limitations of PIECES. The PIECES structure allows for children to demonstrate skills in a natural environment and provides a comparison to age-based norms; however, it does not provide the same opportunities as other play-based assessment measures that allow an adult to act as a play-facilitator to provide opportunities for children to demonstrate additional skills that may be missed during a naturalistic observation. As demonstrated by Doll and Elliott (2005), children may need as many as five observation periods across settings for examiners to ascertain an accurate picture of a child's functioning or for a child to demonstrate a wide range of skills depending on the environmental context. The PIECES model requires more psychometric evidence of reliability and validity. In addition, the play domains were developed from previous research and have not been examined as part of the PIECES framework to check for overlap or factor analytic structure. The PIECES model, nevertheless, has advantages of providing a structured coding model for play demonstrated during the observation periods that may be useful in highlighting a child's strengths and skills. In addition, the parent does not get to serve as an active member of the assessment team during the PIECES administration as in other measures, such as the TPBA-2.

TPBA-2. The first edition of the TPBA (Linder, 1993) was one of the earliest adopted, most widely used and researched play assessment tools (Kelly-Vance & Ryalls, 2005). The assessment takes approximately 1 hour to implement, and yields an age-equivalency score based on coding the behaviors observed during free and facilitated play. The TPBA-2 incorporates both spontaneous play and facilitated play designed to elicit any play behaviors a child may be capable of achieving that were not demonstrated during free play. Different from the PIECES assessment, parents and familiar adults are an integral part of the assessment team and participate as a play partner, facilitator, and expert on the child during the play evaluation (Kelly-Vance & Ryalls, 2005; Linder, 2008). The facilitated play component allows the team to see how the child interacts with others. Prior to coming in for a play assessment, detailed information including the Child and Family History Questionnaire and the Family Assessment of Child Functioning tools, which include a routines-based interview component and a form about the child, are completed to provide the multidisciplinary assessment team with extensive background information on both the child and the child's family (Linder, 2008). The information may be provided as a written questionnaire or in interview format, which is preferable for immediate follow-up (Linder, 2008). The detailed background and routines-based interview form has the flexibility of using the parent as a cofacilitator of play in order to ensure that the behaviors observed are an accurate reflection of the child's behavior across settings and account for any cultural idiosyncrasies (Linder, 2008). The TPBA-2 model also actively incorporates parents as part of the assessment team, which may lead to higher ratings of social validity (Linder, 2008). The observation of the play component typically takes about 60 to 90 minutes to complete

and incorporates seven flexible stages. The behaviors observed during play are coded, and developmental age scores are derived from the observations.

Psychometrics of the TPBA-2. While several studies have been conducted on the TPBA, only one has been published on the TPBA-2. Linas (2009) was the first to evaluate the validity of the TPBA-2. Concurrent validity is measured by determining whether or not a statistically significant association or correlation can be evaluated between groups or scores on an assessment measure (Warner, 2008). Research findings revealed a significant correlation ($r = .95, p < .01$) between the TPBA-2 total score and Bayley-III score (Linas, 2009). In addition, Linas (2009) found high intercorrelations between the cognitive subdomains ($r = .91$), the language subdomains ($r = .95$), the motor subdomains ($r = .83$) of the Bayley-III and the TPBA-2. Linas (2009) also sought to examine the concurrent validity of the TPBA-2 social-emotional scale and the Bayley-III; however, she was unable to achieve a large enough sample size to investigate this domain. Linas (2009) did examine the TPBA-2 and outcomes from the MSEL developmental domains and found significant, positive correlations that were all moderate to high in magnitude for the language ($r = .92$) and motor ($r = .78$) domains. In addition, Linas (2009) found a significant positive relation ($r = .79$) between the TPBA-2 cognitive and MSEL visual reception domains.

Research conducted on the TPBA and TPBA-Revised (TPBA-R) has demonstrated strong concurrent validity with traditional cognitive assessments, including the *Battelle Developmental Inventory, Second Edition* (BDI-II; Newborg, 2005) the MSEL, and the Bayley-II. Kelly-Vance, Needelman, Trioia, and Ryalls (1999) found strong correlations between the Bayley-II Mental Developmental Index and the Cognitive Domain of the TPBA ($r = .74$); and the Physical Index of the Bayley-II with the Sensorimotor domain ($r = .87$). An

additional study of the TPBA in comparison to the BDI-II found that eligibility scores were strongly correlated, and the TPBA was able to identify cases for eligibility for speech and language as well as developmental delays more effectively than standardized assessment measures, such as the BDI-II (DeBruin, 2005). A study by Friedli (as cited in Linder, 2000) found high criterion validity (Phi coefficient = .90) between the BDI-II and the TPBA in determining eligibility for special education and early intervention services with 92% agreement between the BDI-II assessment and TPBA assessment findings. Six separate studies of groups ranging from newly trained professionals, graduate students, experts, and teams with extensive experience in administering the TPBA demonstrated high interrater reliability (0.84-1.00) of videotaped segments with children who were typically developing to those with moderate to severe delays (Linder, 2005; 2008). A study on the TPBA and *Peabody Developmental Motor Scales, Second Edition* (PDMS-2; Folio & Fewell, 2000) showed strong, significant correlations between the TPBA developmental ages and the PDMS-2 age equivalents for gross motor ($r = .95$) and fine motor ($r = .92$) skills at baseline and again 6 months later for both gross motor ($r = .94$) and fine motor ($r = .97$) skills (Sterling, Candler, & Neville, 2011).

A previous study on the social validity of the TPBA (Meyers, McBride, & Peterson, 1996) found that parents rated results from the original TPBA (Linder, 1993) over traditional assessments and that the goals acquired from the assessment were important to the development of their children. Parents in the study also noted that they would feel more comfortable seeking additional information from the play-based assessment team at a later time over the members of the traditional assessment team (Meyers et al., 1996). This demonstrates that assessment results can be directly connected to goals and intervention

development (Linder, 2000). Assessment team members rated the play-based assessment as providing more information than the standardized tests in the domains of communication, social skills, and motor skills (Meyers et al., 1996). The assessment team members also rated the information on the aforementioned domains from the TPBA as an easily obtainable overview of the child's abilities (Meyers et al., 1996). A recent study by Sanches-Ferreira, Linder, Lopes-dos-Santos, Silveira-Maia, & Alves, S. (2015) found that 99% of Portuguese parents ($N = 88$) who experienced the TPBA-2 process felt comfortable during assessment, and 68% of the parents identified the TPBA-2 experience as a more pleasant experience for than the traditional standardized testing experience.

Limitations of the TPBA-2. Although play-based assessments provide information on a child's functioning in naturalistic settings and offer strong links to treatment planning, limitations exist for this method of assessment. Administration of the TPBA-2 requires a full assessment team who must be trained on the administration, interpretation, and treatment planning for a child and family. The assessment team members may require additional training and fidelity check processes to ensure that there is no rater drift over time. A recent independent review of play-based measures found that most studies on play-based assessments in general had limited sample sizes that lacked descriptions of sample characteristics. Although preliminary support for these measures has been promising, additional information on standardization of samples for play ages and developmental ages and technical adequacy (including reliability, validity, and fidelity of implementation over time) are needed.

Current Study

The current study examines the concurrent and social validity of the TPBA-2's social-emotional scale. Although previous studies (e.g., Linas, 2009) have provided support for the cognitive and adaptive domains of the TPBA-2, there has not yet been a published study examining the concurrent and social validity of the social-emotional scale of the TPBA-2. Thus, the current study proposed to examine the concurrent validity of the social-emotional scale of the TPBA-2 and the *Devereux Early Childhood Assessment – Clinical Form* (DECA-C; LeBuffe & Naglieri, 2012), an assessment of resilience in preschoolers aged 2 to 5 with social, emotional, and behavioral concerns. The DECA-C was selected because it provides both a protective factors scale as well as a problem behavior scale. The current study also investigates the social validity of the entire TPBA-2 assessment measure and process as rated by the assessment team and parent participants. Specifically, this study analyzed the concurrent validity of the social-emotional scale as related to a behavior rating scale for protective factors and problem behavior. Recognizing the importance of early identification and early intervention, this study offers new evidence about the use of the play-based assessment to examine protective factors in combination with areas of social-emotional delay or behavioral concern. To date, there are no published studies examining the TPBA-2 overall social-emotional scale and its subscales. The first objective of the study is to compare the outcomes from the social-emotional domain of the play-based measure to the results from the standardized, norm-referenced tool traditionally used to assess social-emotional risk and strengths.

In addition, the current study examined the social validity of the measure in the areas of usability, feasibility, acceptability, system support, system climate, and home school

collaboration as reported by the assessment team members conducting the assessments.

While previous research (e.g., Myers et al., 1996) on play-based assessment provided social validity information regarding the usefulness of the TPBA, the current study expands this work to examine five domains of social validity specific to an educational assessment environment and is the first study to examine the social validity of the TPBA-2. The third objective of this study seeks to investigate further the issues pertaining to social validity for parents who participate as assessment team members in the TPBA-2. The results of this study may provide additional empirical support for the use of the TPBA-2 and contribute to the current research base on the use of a play-based assessment measure as an alternative assessment measure for early childhood assessment as outlined by the NAEYC (2001), AERA, APA, NCME (1999) and NASP (2009) assessment guidelines.

Research Questions

1. Are TPBA-2 social-emotional domain outcomes significantly associated with scores from the *Devereux Early Childhood Assessment Clinical Form* (DECA-C) based on results from administrations during the same time frame?
2. Does the TPBA-2 demonstrate social validity in the areas of usability, acceptability, feasibility, system support, system climate, and home-school collaboration as rated by members of the assessment team on the *User Rating Profile-Assessment* (URP-A; Chafouleas, Miller, Briesch, Neugebauer, & Riley-Tillman, 2012)?
3. Does the TPBA-2 demonstrate social validity in the assessment and treatment planning of children as rated by parents on an adapted version of the *Parents' Perception Scale* (PPS; Simeonsson, Edmondson, Carnahan, & Smith, 1992)

See Table 1 for a detailed list of research questions, hypotheses, and proposed analyses.

Table 1

Questions, Hypotheses, Variables, and Analyses

Questions	Hypotheses	IV	DV	Analyses
Q1: Is there a relation between the TPBA-2 social emotional domain and the DECA-C?	H1: Yes, the TPBA-2 will be significantly (positively) correlated with the DECA-C.	TPBA-2	DECA-C	Pearson product-moment correlations
Q2a: Does the TPBA-2 demonstrate social validity as measured by examiner report?	H2a: Yes, the TPBA-2 will demonstrate social validity for assessors.	TPBA-2	URP-A	Descriptive statistics (Mean and SD)
Q2b: Does the TPBA-2 demonstrate social validity as measured by parent report?	H2b: Yes, the TPBA-2 will demonstrate social validity for parents.	TPBA-2	PPS	Descriptive statistics (Mean and SD)

Based on the incorporation of protective factors into the DECA-C behavior rating scale, it was expected that the outcomes from the TPBA-2 and DECA-C would yield significant correlations. Both measures are designed to assess a child's areas of concern as well as protective factors. Previous studies have shown strong social validity for the TPBA, and it was expected that the TPBA-2 would yield similarly high scores. In addition, the TPBA-2 was designed to simplify the process of assessment, shorten the assessment time, and link assessment and intervention for the assessment team and parents.

Chapter 2: Method

Participants

A power analysis via the G*Power software program was guided by the assumptions of a moderate effect size and power standards set by Cohen (1992). The G*Power software program indicated that a sample size of 43 participants was needed for a Pearson product moment correlation. See Table 2 for participation goals based on alpha, power, and effect size (G*Power; Faul, Erdfelder, Lang & Buchner, 2007).

Table 2

Statistical Analyses, Sample Size, Power and Effect Size for Research Objectives

Research Objective	Statistical Analysis	N	Alpha	Power	Effect Size
Concurrent validity	Pearson correlation	43	< .05	0.80	0.40

Children and Caregivers

Participants for this study included 44 families with children ages ranging from 24 to 60 months old recruited from six local educational agencies (LEA; Johnston County, Buncombe County, Catawba County, Lee County, Martin County, and Craven County) in North Carolina. Participants were referred through the North Carolina Office of Early Learning for evaluation. All English-speaking families with children 24 to 60 months were invited to participate in the study. The sample of children whose parents consented to participate was 72.7% ($N = 32$) male and 27.3% female ($N = 12$), with a mean age of 37.95 months. The LEAs combined demographic makeup includes students who are Caucasian (61%), African American (18%), Hispanic (18.5%), Asian (.5%), and Multiethnic (2%). All children and families were English speaking. In three of the districts, more than 50% of the

children qualified for free or reduced lunch. The caregivers who reported on the children's social-emotional functioning were 95.5% female ($N = 21$) and 4.5% male ($N = 2$); reporters included the children's mothers (87%), fathers (5%) or other caregivers (8%), including grandparents and foster parents.

Assessment Team

In addition to families and their children, trained members of the interdisciplinary assessment teams were recruited to participate by completing a social validity measure on the TPBA-2. The evaluation team respondents ($N = 35$) included members of the team with varying roles, including school psychologists ($n = 10$), occupational therapists ($n = 8$), speech language pathologists ($n = 5$), early childhood special education teachers ($n = 10$), and other team support roles ($n = 2$), including case managers and early interventionists. Of the professionals invited to participate in the study, 78% responded to the URP-A scale questions. The highest levels of education attained by the respondents included Bachelor's degrees (29%), master's degrees (39%), specialists degrees (29%), and doctoral degrees (3%). In addition, each member completed training on administration, scoring, and interpretation of the TPBA-2. Each professional evaluation team and site was checked for fidelity of implementation within the past 12 months to ensure accuracy and reliability in execution of the TPBA-2 model (see Table 3).

Table 3

Sample Demographics for Assessment Team Participants

		N	%
Gender	Male	2	6
	Female	35	94
Role	Psychologist	10	29
	SpEd Teacher	10	29
	Speech (SLP)	5	14
	OT/PT	8	23
	Other	2	5
Education	BA	10	29
	MA	14	39
	Specialist (EdS)	10	29
	Doctorate	1	3

Procedure

With the support of the North Carolina Department of Education's Office of Early Learning, participants for this study were recruited in six county educational sites that had been fidelity checked for implementation of the TPBA-2 within the 12 months prior to beginning the study. The fidelity check included each site receiving ratings of 80% or above reliability in fidelity of implementation during an observation with Dr. Linder, the developer of the TPBA-2. In addition to fidelity of coding, fidelity to process implementation was evaluated and rated using a checklist. Evaluators on each team had undergone training on the TPBA-2, and a TPBA-2 trainer had certified the site within the past year. The TPBA-2 assessment teams included a psychologist, a speech language pathologist, and an occupational therapist. Some teams also consisted of additional professionals, such as special education teachers, social workers, or behavior specialists. Prospective TPBA-2 assessment team members were provided with a letter detailing the purpose and parameters of the study,

and team members were asked to sign a consent form to indicate whether or not they would like to participate in the study (see Appendix A).

Families who were referred for evaluation to each of these sites were also asked to participate in the study through the receipt of a detailed letter outlining the purpose of the study (see Appendix B). A copy of the informed consent form also accompanied this letter. All English-speaking families of children ages 24 to 60 months were invited to participate in the study. Upon agreeing to participate and after signing informed consent, each case was assigned a unique identification number to protect confidentiality of the participants. Caregivers were asked to complete the DECA-C prior to participating in the TPBA-2 administration to prevent participation in the assessment and discussion with the professionals from biasing responses. Families who agreed to participate were also asked to complete a social validity questionnaire following each feedback session. While 96% of caregivers ($N = 44$) who consented to participate in the study completed the DECA-C, only 27.30% of caregivers ($N = 12$) completed the social validity questionnaire. To ensure that parents would be comfortable providing authentic ratings, they were given sealable, postage paid envelopes in which to return all forms. All of the data received was stored on password protected electronic devices in a locked area with restricted access. Once the deidentified data was transferred to spreadsheet files, the files were encrypted to ensure further protection.

Measures

Play-Based Assessment

The TPBA-2 was administered in order to evaluate a child's social-emotional and adaptive functioning. The TPBA-2 is a multidisciplinary assessment developed for use with children ages 1 to 72 months. By using a coding system during both free and facilitated play

sessions, the TPBA-2 yields developmental age equivalencies for each of the five domains: (a) sensorimotor development, (b) vision development, (c) emotional and social development, (d) communication development, and (e) cognitive development (Linder, 2008). With the exception of the vision development domain, which has five subscales, each of the other four domains includes seven subscales. The seven subscales of the emotional and social domain include: (a) emotional expression, (b) emotional style/adaptability, (c) regulation of emotions and arousal states, (d) behavioral regulation, (e) sense of self, (f) emotional themes in play, and (g) social interactions (Linder, 2008). The subcategories of the emotional and social domain are outlined below in Table 4. During the free and facilitated play sessions, members of a transdisciplinary assessment team—which typically include a psychologist, speech-language pathologist, physical or occupational therapist, and the child’s parents—have observation notes, guidelines, and age tables to use as references to record play behavior systematically and determine the appropriate developmental age equivalent for the child based on behaviors observed and coded (Linder, 2008).

Table 4

TPBA-2 Emotional and Social Domain Subcategories and Definitions

Subcategory	Description
Emotional expression	Communication of reactions, feelings, or intentions to others through facial patterns, muscle tension, body posture, and position of extremities, movements, gestures, and words. This includes overall disposition or mood.
Emotional style/adaptability	The child's typical affective response to different situations, including two elements of temperament: approach or withdrawal to new stimuli and adaptability to change.
Regulation of emotions and arousal states	Ability to regulate physiological states of awareness (sleeping, crying, etc.) and control emotional reactions to both internal and external stimuli, including being able to self-calm and inhibit impulsive actions and emotions.
Behavior regulation	The ability to control impulses, monitor one's actions and interactions, and respond within the parameters of culturally accepted behavior, including compliance with adult requests, self-control over behaviors perceived as wrong, and use of social conventions.
Sense of self	Understanding of self as a separate person capable of having an effect on his/her environment, including desire to accomplish goals to be independent and competent.
Emotional themes in play	Expression of inner feelings, including worries, fears, traumas, through the actions of play, especially through the dramatic representations of self or dolls.
Social interactions	Ability to attend to social aspects of play, to read cues, to interpret and communicate social information, to get along with others and avoid negativity and conflict with others (including parents, strangers, siblings, and peers) within isolated, parallel, associative, cooperative, or complementary roles in play interactions.

Note. This table is adapted from *Transdisciplinary Play-Based Assessment* (2nd ed.) by T. W. Linder (2008), p. 97. Copyright 2008 by the Paul H. Brookes Publishing Co.

Behavioral and Social Emotional Health

The DECA-C assesses for areas of strength as well as difficulty in the area of social-emotional and behavioral functioning in early childhood in order to provide a more complete and holistic view of the child being assessed (Naglieri, LeBuffe, & Ross, 2013). The DECA-

C provides a protective factor scale that addresses a child's socio-emotional strengths or protective factors reporting in three areas: (a) initiative (e.g., demonstrates perseverance), (b) self-regulation (e.g., ability to self-soothe), and (c) attachment/relationships (e.g., has developed strong bonds with adults and is able to trust those people). A behavioral concerns scale was also used, with higher scores indicating more behavior problems. Research on the DECA-C has reported high reliability on both parent and teacher scales, as reported via the Cronbach alpha values for initiative (parent = .90, teacher = .84), self-control (parent = .85, teacher = .76), and attachment (parent = .80, teacher = .71), according to initial research by LeBuffe and Naglieri (1999) and supported by subsequent research (Winsler et al., 2008). The DECA-C provides raw scores, standard scores and percentile rank.

Social Validity of Assessment

The URP-A is a 28-item self-report measure designed to evaluate perceptions regarding the usability of a particular assessment measure as well as gather additional information on factors influencing the use of the measure. Respondents rate their level of agreement on a six-point Likert scale ranging (1 = strongly disagree, 2 = disagree, 3 = sometimes disagree, 4 = sometimes agree, 5 = agree, 6 = strongly agree). Previous factor analytic research (Miller et al., 2014) report a six-factor structure: acceptability, feasibility, understanding, home-school collaboration, system climate, and system support; and earlier research on the measure demonstrated internal consistency alpha values of between .63 and .90 (Miller et al., 2014).

Social Validity of Parent Experience

The PPS-adapted is a 25-item questionnaire adapted from the parents' perception scale (Simeonsson et al., 1992). The PPS is a theoretically-based, empirically-validated scale

developed by early childhood professionals and researchers in North Carolina. It has been used in research projects (e.g., Bailey & Simeonsson, 1988; Blanes, Correa, & Bailey, 1999; Meyers et al., 1996) to assess social validity of the TPBA. Parents and primary caregivers responded to the Likert scale ratings (1 = strongly disagree, 2 = disagree, 3 = sometimes disagree, 4 = sometimes agree, 5 = agree, 6 = strongly agree). Items rated 4 and above are considered to have high agreement, and items rated 3 and below displayed low agreement.

Statistical Analyses

Research Question 1

Pearson product moment correlations were performed using SPSS 22 to assess whether a significant association exists between participant's scores on the TPBA-2 and DECA-C. Outcomes scores were examined using bivariate product-moment correlation analysis. Effect sizes for all Pearson product moment correlations were interpreted on the basis of Cohen's suggestions (as cited in Field, 2009) for effect size, with $r = +/- .10$ (small effect), $r = +/- .30$ (moderate effect) and $r = +/- .50$ (large effect). The DECA-C raw scores for protective factors and problem behaviors were analyzed with the TPBA-2 age equivalency scores for the total social emotional domain. In addition, Pearson product moment correlations were conducted for the TPBA-2 age equivalency score and the subdomains on the TPBA-2. Bonferroni adjustments were conducted for the alpha level significance when comparing the TPBA-2 outcome score to the two domains of the DECA-C—the protective factors scale and problem behaviors scale—and the seven sub-domains of the DECA-C, adjusting the alpha-level to $p \leq 0.006$ for the analysis.

Research Question 2

The URP-A was scored according to the guidelines presented in the measure. SPSS 21 was used to analyze the descriptive statistics, including means and standard deviations for each of the six domains to provide information on the usability, acceptability, feasibility of the measure, as well as to examine home-school collaboration, system support, and system climate as rated by the assessment team.

Research Question 3

Responses on the PPS-adapted based on a six-point Likert scale were analyzed using SPSS 21. Descriptive statistics including means and standard deviations for each of the 25 questions are reported.

Chapter 3: Results

Prior to calculating Pearson product moment correlation for the TPBA-2 and DECA-C scores, the descriptive statistics (i.e., means & standard deviations) for both measures were examined (see Table 5). In addition, preliminary Pearson product moment correlations were conducted to investigate the subscales of the TPBA-2 social-emotional scale. The results of these correlations revealed strong, significant positive correlations among the TPBA-2 subscales. Due to the high correlations, which may indicate redundancy between scales, only the total TPBA-2 age equivalency scores were correlated with the DECA-C raw scores. A correlation matrix with the correlations for the TPBA-2 subscales is presented below (see Table 6).

Table 5

Descriptive Statistics for DECA-C Total Scores and TPBA-2 Social-Emotional Age Scores

	N	Mean	SD
DECA-C Total Protective Factors	44	57.09	16.41
DECA-C Total Problem Behaviors	44	59.80	19.31
TPBA-2 Age Equivalency	44	24.89	12.54

Table 6

Correlation Matrix of TPBA-2 Social-Emotional Subscales

1	TPBA_2 EMOREG	TPBA-2 BEHREG	TPBA-2 EMOEXP	TPBA-2 SELF	TPBA-2 TIP	TPBA-2 SOCINT
TPBA_2 EMOREG	1					
TPBA-2 BEHREG	.97***	1				
TPBA-2 EMOEXP	.94***	.95***	1			
TPBA-2 SELF	.91***	.91***	.84***	1		
TPBA-2 TIP	.94***	.94***	.93***	.93***	1	
TPBA-2 SOCINT	.94***	.94***	.94***	.92***	.94***	1

Note. * $p < .05$ ** $p < .01$ *** $p < .001$ (1-tailed). EMOREG = Emotional Regulation; BEHREG = Behavioral Regulation; EMOEXP = Emotional Expression; SELF = Sense of Self; TIP = Themes in Play; SOCINT = Social Interactions.

Concurrent Validity

Results from the Pearson product moment correlations reveal moderate and significant associations between the TPBA-2 total age equivalency score and the DECA-C total protective factor raw score ($r = .44, p < .01$). The correlation between the TPBA-2 total

age equivalency score and the DECA-C total behavior problems raw score ($r = -.15$) was found to be small and non-significant. In addition to analyzing the outcome scores, subdomain scores from the DECA-C were also correlated with the TPBA-2 social-emotional age equivalency score. Results from the Pearson product moment correlations reveal significant associations between the TPBA-2 total age equivalency score, and the DECA-C Withdrawal/Depression (WDEP) score ($r = -.36, p = .006$), which demonstrates a moderate, inverse relation and the Initiative (IN) score ($r = .57, p < .001$), which demonstrates a strong, positive relation. All correlations are reported below (see Tables 7).

Table 7

Concurrent Validity of DECA-C Sub-domains and TPBA-2 Age Equivalency Score

	TPBA-2 AE	
	<i>r</i>	<i>p</i>
DECA-C TOTPRO	0.44	< .001***
Initiative	0.57	< .001***
Self Control	0.26	< .05*
Attachment	0.29	< .05*
DECA-C BEHPROB	-0.15	0.159
Withdrawal/Depression	-0.33	.006**
Aggression	-0.06	0.334
Attention	-0.33	< .01**
Emotional Control Problems	-0.12	0.214

Note. * $p < .05$ ** $p < .01$ *** $p < .001$ (one-tailed). TOTPRO = Total Protective Factors; BEHPROB = Behavioral Problems. AE = Age Equivalency.

Social Validity as Rated by the Assessment Team

Respondents on the URP-A rated their level of agreement on a six-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *sometimes disagree*, 4 = *sometimes agree*, 5 = *agree*,

6 = *strongly agree*) in the areas of acceptability, feasibility, understanding, system climate, system support, and home school collaboration. Results from the URP-A as rated by the assessment team members provide support for each of the six domains of social validity, with understanding ($M = 5.39$) and system climate ($M = 5.31$) receiving the highest rankings with means above 5, where 5 indicates *agree*. Home school collaboration ($M = 4.93$), feasibility ($M = 4.78$), acceptability ($M = 4.67$) and system support ($M = 4.15$) all received average ratings of above 4, which corresponds with the response *sometimes agree* response category (see Table 8. All of the assessment team responses revealed average ratings of above 4.15, with a range of mean scores from 4.15 to 6.00 on each of the six scales (usability, feasibility, system climate, system support, home school collaboration and acceptability). Understanding and system climate had the highest mean scores, indicating that the team believed they were well-trained on the measure and felt comfortable implementing the assessment. The relatively high means also suggest that the measure was in-line with the overall culture and belief-system of the assessment team and school. Although still rated above a 4, acceptability ($M = 4.67$) and system support ($M = 4.15$) were the lowest rated items.

Table 8

Usage Profile Ratings-Assessment Means and Standard Deviations

	N	Minimum	Maximum	Means	SD
Acceptability	34	3.78	5.33	4.67	0.35
Feasibility	34	3.33	5.83	4.78	0.52
Understanding	35	4.00	6.00	5.39	0.57
System Climate	34	4.25	6.00	5.31	0.43
System Support	34	3.00	6.00	4.15	0.84
Home School Collaboration	35	2.33	6.00	4.94	0.76

Social Validity as Rated by Parents

Results from the adapted PPS scale as rated by the parents provide support for the use of the assessment measure to: (a) accurately identify a child's strengths and areas of concern, (b) inform the parents on possible interventions and new ways of working with the child, and (c) provide relevant and useful information for treatment planning. Parents and primary caregivers responded to the Likert scale ratings (1 = *strongly disagree*, 2 = *disagree*, 3 = *sometimes disagree*, 4 = *sometimes agree*, 5 = *agree*, 6 = *strongly agree*). Items rated 4 and above are considered to have high agreement, and items rated 3 and below displayed low agreement. The results from the PPS indicate that 100% of the parent participants "strongly agree" that they felt comfortable participating in the assessment process ($M = 6.00$, $SD = .000$). Overall, the mean ratings fell above 5.0; however, parents did rate two areas on the items of knowledge about their child below 5.0. The two below 5.0 were as follows: (a) "The assessment helped me answer questions I had about my child" ($M = 4.92$, $SD = 1.16$), and (b) "I learned something new about my child" ($M = 4.92$, $SD = 1.08$). These items had the lowest mean scores and high standard deviation scores. The next highest rated items included: (a) "The team took into account our family's concerns and needs when designing goals" ($M = 5.91$, $SD = .29$), and (b) "Participating in the assessment helped me understand my child's report" ($M = 4.92$, $SD = 1.16$), indicating the caregivers' overall comfort level in participating in the play-based assessment process. Means and standard deviations are reported in Table 9 for each item.

Table 9

PPS Means and Standard Deviations

	N	Means	SD
1. I felt comfortable asking questions during the assessment	12	5.83	0.39
2. I felt comfortable participating in the evaluation	12	6.00	0.00
3. I learned something new about my child	12	4.92	1.08
4. The assessment provided an accurate picture of my child's typical behavior	12	5.25	0.75
5. The assessment helped answer questions I had about my child	12	4.92	1.16
6. The team members asked listened to me	12	5.75	0.45
7. I felt like a valued member of the assessment team	12	5.83	0.39
8. I was able to provide input on what goals I wanted to be able to work on	12	5.83	0.39
9. The team took into account our family's concerns and needs when designing goals	12	5.91	0.29
10. I feel like the goals for my child are achievable during our daily routine	12	5.42	0.67
11. I agree with the goals identified and believe that these are important goals	12	5.83	0.39
12. My child's report is written so that I understand it	12	5.66	0.49
13. Participating in the evaluation helped me understand my child's report	12	5.91	0.29
14. I liked how the team evaluated my child	12	5.75	0.45
15. I liked being involved in the assessment of my child	12	5.83	0.39
16. The services and/or recommendations that the team provided will be helpful	12	5.75	0.49
17. The team's assessment of my child appears to be accurate	12	5.67	0.79
18. The assessment provided an accurate overall picture of the child's daily functioning.	12	5.08	0.69
19. The assessment accurately displayed the child's strengths	12	5.54	0.52
20. The assessment accurately displayed the child's areas of concern outlined in the referral question	12	5.50	0.75
21. The assessment helped the child demonstrate his/her highest level of skill	12	5.25	0.93
22. I learned new ways to work with my child through observing the evaluation	12	5.12	0.67
23. I believed that the assessment team truly understood our unique family background	12	5.50	0.67
24. I believe that the recommended intervention goals are valuable	12	5.67	0.49
25. I have a good understanding of these goals and how they will help my child	12	5.50	0.52

Chapter 4: Discussion

This study is the first to explore the social-emotional scale of the TPBA-2 in comparison to the DECA-C, a measure that incorporates both protective factors as well as a behavioral problem scale. In addition, this dissertation is the first to examine the social validity of the TPBA-2 in the areas of usability, feasibility, system climate, system support, home school collaboration, and acceptability as rated by trained and fidelity checked assessment team members. This study also provided confirmatory support and additional evidence on the social validity of the TPBA-2 as rated by parent participants. A discussion of the findings is outlined in depth below.

Concurrent Validity

Results from the study show moderate to strong correlations between the overall outcomes scores on the TPBA-2 age equivalency scores and the DECA-C total protective factors and behavioral problems raw scores. The protective factors score on the DECA-C revealed a strong, significant correlation with the TPBA-2 age equivalency score while the behavioral problems score only revealed a moderate, nonsignificant correlation with the TPBA-2 age equivalency score. A possible explanation for this may be the structure of the measures; specifically, the DECA-C breaks out the measure into two distinct scores (the strengths-based protective factor score and the behavioral problems score), and the TPBA-2 uses both strengths and areas of delay to inform an overall outcome age range with an average range of functioning for the subscale.

Further exploration of the individual factor items on the DECA-C and the TPBA-2 reveal a significant and positive association between the TPBA-2 age equivalency score and the DECA-C's Initiative subscale. Given that initiative is the key to expressing emotion and

demonstrating emotion, this is an expected finding. The results from the Pearson product moment correlation analysis may indicate that protective factors are more heavily weighted for the TPBA-2 than the behavioral concerns when compared to the DECA-C; however, this result could also indicate a different scoring structure. As previously noted in earlier research (see Linas, 2009), and consistent with the findings in this study, there was less variability in the DECA-C behavioral scores when they were compared against norms on a 62-item screener. In addition, the DECA-C's withdrawal/depression subscale revealed a moderate inverse relationship with the TPBA-2 social-emotional age equivalency score, which would also be expected because children who are more withdrawn tend to demonstrate fewer skills or engage with peers, parents, and play facilitators less. All of the protective factor scales demonstrated positive relations with the TPBA-2 age equivalency and each of the behavioral problems scales revealed inverse relations as expected. This indicates that the more protective factors a child has, the higher his social-emotional age equivalency would be expected, and the more behavioral problems, the inverse would be anticipated. Compared to previous research that analyzed the relation between the 35-item emotional screener on the Bayley-III and the TPBA-2 subscale (see Linas, 2009), this study did find evidence of a significant relation between the social-emotional scale and the DECA-C.

Social Validity as Rated by the Assessment Team

All of the assessment team responses revealed a range of mean scores from “agree” to “strongly agree” on each of the six scales (usability, feasibility, system climate, system support, home school collaboration, and acceptability). Understanding and system climate had the highest mean scores, indicating that the team believed they were well-trained on the measure and felt comfortable implementing the assessment. The relatively high means also

suggests that the measure was aligned with the overall culture and belief-system of the assessment team and school. Although still rated above a 4 or “sometimes agree,” acceptability and system support were the lowest rated items. The creators of the URP-A suggest reverse coding system support, as lower scores may indicate more independence to administer the assessment without relying on the system (Chafouleas et al., 2011). However, a score above 4 indicates that the team still feels supported by the system in the use of this measure. This item was not reverse coded for this study because it was important to get an accurate picture of the team’s beliefs about the use of the instrument in an LEA that provides a certain level of development. System support in this construct relates to whether or not the administration, school system, or in this case, the LEA, and Office of Early Learning support the use of the instrument through funding, training, and ongoing educational support. On this measure, it is not surprising that system support would be rated above a 4 given the state’s investment in using the TPBA-2, but there may be some intersite differences given the variability in locations, trainings, and philosophies site to site. The administration of the TPBA-2 does require ongoing training and support to ensure interrater reliability and roles, which may be reflected in this score as well.

On the system support items, more than 50% ($N = 23$) of the assessment team members indicated that they would need consultative support to carry out this assessment. Given the nature of this assessment, consultation with team members is vital to the delivery of the assessment. Eighteen percent of respondents “agree” or “strongly agree” that they would need more professional development to carry out the assessment. These sites were selected because of the recent trainings and passing fidelity of implementation scores within the 12 months prior to conducting this study. Each of the sites had recently been fidelity

checked and had received booster trainings throughout the year prior, which may have inflated the scores on this measure. Sites without access to consultation, fidelity checks, and ongoing training may provide lower scores on this measure of social validity as the support and infrastructure are directly related to the success of implementation.

Social Validity as Rated by Parents

The results from the PPS indicate that 100% of the parent participants “strongly agree” that they felt comfortable participating in the assessment process. The highest rated items included: (a) “The team took into account our family’s concerns and needs when designing goals” and (b) “Participating in the assessment helped me understand my child’s report,” indicating the caregivers’ overall comfort level in participating in the play-based assessment process. The lowest rated items were as follows: (a) “The assessment helped me answer questions I had about my child,” and (b) “I learned something new about my child.” These items had the lowest mean scores and high standard deviation scores. These findings indicate that the parents felt validated by the assessment process and believed that the assessment process was able to highlight the concerns the families had regarding the development of their children. However, the families did not believe that they learned anything new during the assessment process. This may mean that although the team did an excellent job listening to the parents and incorporating their concerns, the assessment team members were not offering enough education on the developmental process during the assessment and feedback.

It is also important to note that 100% of children assessed for this study were able to achieve a valid TPBA-2 assessment and age equivalency scores for every domain of the TPBA-2. None of the children were considered “untestable” or required additional measures for making decisions of eligibility for early intervention services. In addition, prior research

has suggested that having parents participate and provide their opinions and feedback gives parents an increased sense of approval and fulfillment (Winston & Turnbull, 1981). These findings align with previous research conducted on the TPBA, which found that parents rated play-based assessments higher than standardized assessments (Meyers et al., 1995). However, it is important to note that although parents ranked play-based assessments significantly higher than standardized assessments, overall rankings for all assessment measures yielded scores consistent with “high social validity” indicating that there may be some response bias.

Limitations of the Study

The participants from this study came from a relatively small sample from six districts in one state in the Southeast. While significant correlations were discovered between the TPBA-2 and the DECA-C, these findings may be influenced by the smaller sample size, which could result in a larger correlation effect than may be present in the population (Kareev, Lieberman, & Leve, 1997). In order to overcome this potential limitation, this study should be replicated with a larger sample if possible. In addition, although the sample set was pulled from six different LEAs, all of the LEAs came from one state, potentially reducing the diversity of the sample, which could also influence the findings related to this particular study. The researchers were not able to collect specific demographic and background information on the families who consented to participate in the study, and this information may impact the children referred, the parent response to the assessment process, and the assessment team response to the family and child. Not being able to control for socioeconomic, cultural, or other factors may unwittingly bias the outcomes of the assessment. In addition, the children were each referred to the North Carolina Office of Early Learning due to suspected concerns of developmental delay; thus, the sample set is not

representative of the general population and lacks diversity in that sense. Furthermore, the TPBA-2 is designed to be culturally and linguistically sensitive; however, this study did not address that element of the design as only English-speaking families were invited to participate given that the DECA-C did not have a translated version available for use in the study. Examining the social-emotional subscale with a linguistically diverse population would provide valuable information on the cultural sensitivity. The current study was conducted through LEA's, but examining the social validity of parents and assessment team members at different sites (e.g., hospitals, intervention clinics, or private early childhood education centers) with diverse theories of assessment and development and varying levels of system support would provide a more diverse and representational sample of the population implementing and receiving the TPBA-2. Although all of the teams and sites had been fidelity checked for implementation, the study did not address the team member's varying experience in providing arena assessment. In addition, the social validity data were collected on the TPBA-2 measure only; as such, there is no possibility of a comparison to standardized measures. In other words, the TPBA-2 can only be used to analyze the parent and assessment team response to the measure presented.

Another factor that should be considered is the lack of empirical support for the measure of parent social validity. Although the PPS has been used in previous studies and is a research-based tool, the evidence in support of this measure has not been published by peer-reviewed work. Likewise, although empirical support exists for the URP-A, it is in the preliminary stages and currently has limited support for technical adequacy. Likert-scale items worded in affirmative language have received previous criticism for encouraging over-estimations of positive response patterns (Schwarz & Baer, 1991). This could account for the

high social validity ratings on most items answered by assessment team members and parents. Although some variability existed in the assessment team responses, the parent responses showed less diversity in the attitudes toward the TPBA-2 process. Parents may have responded more favorably to the social validity items because they were grateful to be included and may have exhibited social-desirability bias. In other words, being asked to participate and provide insight may increase the likelihood of higher approval ratings on an assessment (Buysse, Smith, Bailey, & Simeonsson, 1993).

The aforementioned limitations offer opportunity and direction for future research to look at the ethnic, cultural, and regional factors that may influence the administration and interpretation of the TPBA-2 outcomes, as this is an area that has not previously been addressed. In addition, a larger sample size to review the parent perceptions of the assessment measure and feedback is important given the small sample size ($N = 12$) in this study. Less than a third of caregivers submitted to responses on the PPS; this low response rate could also bias the positive responses. The low completion rate of the social validity measure can largely be attributed to sites forgetting or omitting the step of having the caregivers fill out the measure following the feedback.

Implications for Practice and Future Directions

Although studies have shown that play-based assessment is the most common alternative assessment measure when standardized assessments do not yield interpretable or meaningful results, little empirical support exists for the use of these measures (Bracken, 1994; Kelly-Vance et al., 2002; Linas, 2009). Results from this study serve to provide additional empirical support for the use of the TPBA-2 as an assessment tool for children with developmental delays. This study examined the viability of using the TPBA-2 as an

alternative assessment of social-emotional and behavioral functioning, as well as the social validity of the measure as rated by the assessment teams and the parents. The results from the social validity measures provide support for the TPBA-2 as a measure that is well-regarded by the assessment team to provide accurate information for use within their systems. In addition, findings from this study provide important information that can be used to improve the evaluation process for measuring developmental delays and disabilities in early childhood assessments. Feedback from the parent questionnaires provided preliminary support for the measure as rated by a small sample of participating caregivers and may also be used to better inform the researchers on the benefits and shortcomings of evaluations in early childhood to improve the process. Specifically, the caregivers rated the measure as being good at providing an accurate picture of their children's functioning and providing the opportunity to display their skills and problem behaviors.

Future research to address the limitations previously noted would help improve psychometric support of the assessment instrument. In addition, using Latent Profile Analysis to determine class profiles derived from an assessment with the TPBA-2 would provide valuable information on children's developmental profiles and expected outcomes associated with those profiles, which could assist in linking interventions to assessment. Being able to identify class profiles derived from the TPBA-2 would allow more in-depth studies on the trajectories and intervention outcomes and may help focus future research on effective treatment planning. While increasing pressure is being placed on school districts to provide accurate assessment and to identify children early, it is important for practitioners to have measures with evidence of reliability and validity to assess children in ecologically valid

contexts and perhaps more importantly to link appropriate and effective interventions for optimal results.

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Appendix A: Professional Evaluator Consent Form

Dear Professional,

This preschool site is part of the Preschool Assessment Project with the North Carolina Office of Early Learning and uses the Transdisciplinary Play-Based Assessment-2 (TPBA-2) developed by Toni Linder as an evaluation tool for children in early childhood. As a professional trained in the administration of the Transdisciplinary Play-Based Assessment-2 (TPBA-2), we would like to ask you to be a part of our research study. Your team has received a high level of training and has scored as research reliable in fidelity of implementation. This is an important study that will help us to evaluate the assessment process in early childhood for special education services and eligibility. This research will provide valuable information about your experiences while assessing children for early intervention services. This research will help us improve the evaluation process for guardians of children being assessed and provide important evidence for the use of the TPBA-2 as an assessment measure. *Participation is voluntary and requires your permission.*

Study Content. This study will gather information on the social validity of the TPBA-2 assessment process. The researchers will be looking at the System Support, Usability, Feasibility, Acceptability and Home School Collaboration elements of the TPBA-2.

It is Confidential. Your confidentiality and privacy will be protected at all times as a research participant. Your responses will be identified by code number only and will be kept separate from information that could identify you. This is done to protect the confidentiality of your responses. Only the researcher and evaluation team will have access to your individual data, which will be kept in a secured location and any reports generated as a result of this study will use only group averages and paraphrased wording. The results from this survey are compiled into reports. The information you provide about the assessment will **only** be reported as part of a group, not individually. The results of this study will also be used for research to better understand the TPBA-2 from your perspective.

Administration. Following the completion of the TPBA-2 administration, you will be asked to fill out a brief survey that assesses the social validity of the TPBA-2 assessment.

Assessment team participation will include:

1. Allowing the research team to review assessment results with the parents' consent; and
2. Being asked to complete a measure of social validity that measures your beliefs and perceptions about the assessment and assessment process.

It is Voluntary. If you agree to participate, you do not have to answer any questions that you do not want to answer, and may stop filling out the assessments at any time.

Potential Risks. There are no known risks of physical harm to you. In rare instances, some discomfort might be experienced from the questions. The research team has a licensed psychologist on staff and will be available to answer questions throughout the administration of the assessment.

Potential Benefits. Information gathered will help us better understand the evaluation process from your perspective. This research will help us improve the evaluation process for

children and their guardians by providing important evidence of validity for the use of the TPBA-2 as an assessment measure.

Disclosure of Personal and Financial Interests in the Research and Study Sponsor. The program leaders and researchers will not benefit in any way from your participation, other than contributing to an understanding of assessment in early childhood.

This research will be conducted by Courtney C. Bolton, M.A., a doctoral candidate working under the supervision of Dr. Erin Dowdy at the University of California Santa Barbara.

If you have any questions regarding this research, please contact Courtney Bolton by email at cbolton@education.ucsb.edu or by phone at 310-755-9996 or Dr. Dowdy by email at edowdy@education.ucsb.edu or by phone at 805-893-2703.

If you have any questions regarding your rights and participation as a research subject, please contact the Human Subjects Committee at (805) 893-3807 or hsc@research.ucsb.edu. Or, write to the University of California, Human Subjects Committee, Office of Research, Santa Barbara.

Professional Consent Form

I agree to participate in this study, and I understand that I may withdraw my consent at any time.

Signature: _____ Date: _____

(Please Print Below)

THANK YOU FOR COMPLETING AND RETURNING THIS FORM

Appendix B: Guardian Consent Form

Evaluation of Social-Emotional and Behavioral Abilities and Concerns in Early Childhood

Dear Parent/Guardian:

This preschool site is part of the Preschool Assessment Project with the North Carolina Office of Early Learning and uses the Transdisciplinary Play-Based Assessment-2 (TPBA-2) developed by Toni Linder as an evaluation tool for children in early childhood. The evaluation teams at this site have achieved a high level of training and are participating in research to make this evaluation process better. Because your child will be participating in the TPBA-2, we would like to invite your family to participate in a research study on assessment measures in early childhood. This study will provide valuable information on the use and validity of play-based assessment methods in early childhood. In addition, this research will help us improve the evaluation process for other children and families.

This is a very important study that will help us to evaluate the services provided. This research will provide valuable information about your experiences while having your child assessed for early intervention services. This research will help us improve the evaluation process for other children and families and provide important evidence for the use of the TPBA-2 as an assessment measure. *Participation is voluntary and requires your permission.*

Study Content. This study will gather additional information about your child's social-emotional and behavioral strengths and concerns that we will share with you if you would like. In addition, we will be asking you to fill out a social validity scale on the assessment process of your child in order to evaluate the assessment process.

Your participation will include:

1. Allowing the research team to review your child's assessment scores
2. Being asked to complete a measure of social validity that reviews your beliefs and perceptions about the assessment following their evaluation and feedback session; and
3. Being asked to complete a social-emotional assessment measure, the DECA-C prior to the assessment.

The results from this study are compiled into reports. The information you provide about your child and the assessment will **only** be reported as part of a group, not individually. The results of this study will also be used for research to better understand the TPBA-2 from your perspective.

It is Voluntary. If you agree to participate, you do not have to answer any questions that you do not want to answer, and may stop filling out the assessments at any time.

It is Confidential. Your confidentiality and the privacy of your child will be protected at all times as a research participant. Your responses will be identified by code number only and will be kept separate from information that could identify you. This is done to protect the confidentiality of your responses. Only the researcher and evaluation team will have access to your individual data, which will be kept in a locked and secure location and any reports generated as a result of this study will use only group averages and paraphrased wording.

Administration. One assessment will be given at the site prior to your child's TPBA-2 assessment and the other will be given following your child's feedback session. Both assessments take approximately 15-20 minutes to complete.

Potential Risks. There are no known risks of physical harm to you. In rare instances, some discomfort might be experienced from the questions. The research team has a licensed psychologist on staff and will be available to answer questions throughout the administration of the assessment.

Potential Benefits. This evaluation will help us to know the best ways to address your child's needs and to evaluate the assessment services provided. Information gathered will help us better understand the evaluation process from your perspective. This research will help us improve the evaluation process for other children and families by providing important evidence of validity for the use of the TPBA-2 as an assessment measure.

Disclosure of Personal and Financial Interests in the Research and Study Sponsor. The program leaders and researchers will not benefit in any way from your participation, other than contributing to an understanding of assessment in early childhood.

This research will be conducted by Courtney C. Bolton, M.A., a doctoral candidate working under the supervision of Dr. Erin Dowdy at the University of California Santa Barbara. If you have any questions regarding this research, please contact Courtney Carlisle Bolton by email at cbolton@education.ucsb.edu or by phone at 901-212-9223 or Dr. Dowdy by email at edowdy@education.ucsb.edu or by phone at 805-893-2703.

If you have any questions regarding your rights and participation as a research subject, please contact the Human Subjects Committee at (805) 893-3807 or hsc@research.ucsb.edu. Or, write to the University of California, Human Subjects Committee, Office of Research, Santa Barbara.

Parent Consent Form

I agree to participate in this study, and I understand that I may withdraw my consent at any time.

Signature: _____ Date: _____

My child's name is: _____

(Please Print)

THANK YOU FOR COMPLETING AND RETURNING THIS FORM

Appendix C: Parent's Perceptions of TPBA-2 Questionnaire

Please answer the questions below about your experience during this assessment.

1. I felt comfortable asking questions during the assessment.
2. I felt comfortable participating in the evaluation.
3. I learned something new about my child.
4. The assessment provided an accurate picture of my child's typical behavior.
5. The assessment helped answer questions I had about my child.
6. The team members asked listened to me.
7. I felt like a valued member of the assessment team.
8. I was able to provide input on what goals I wanted to be able to work on.
9. The team took into account our family's concerns and needs when designing goals.
10. I feel like the goals for my child are achievable during our daily routine.
11. I agree with the goals identified and believe that these are important goals.
12. My child's report is written so that I understand it.
13. Participating in the evaluation helped me understand my child's report.
14. I liked how the team evaluated my child.
15. I liked being involved in the assessment of my child.
16. The services and/or recommendations that the team provided will be helpful.
17. The team's assessment of my child appears to be accurate.
18. The assessment provided an accurate overall picture of the child's daily functioning.
19. The assessment accurately displayed the child's strengths.
20. The assessment accurately displayed the child's areas of concern outlined in the referral question.

21. The assessment helped the child demonstrate his/her highest level of skill.
22. I learned new ways to work with my child through observing the evaluation.
23. I believed that the assessment team truly understood our unique family background.
24. I believe that the recommended intervention goals are valuable.
25. I have a good understanding of these goals and how they will help my child.